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# What affects the predictions of private forecasters? The role of central bank forecasts in Chile



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## ABSTRACT

This study utilizes Chilean data for analyzing the factors that affect the expectations of private forecasters (PFs), and, in particular, for determining whether they are influenced by the Central Bank of Chile's (CBC's) forecasts. Robust evidence suggests that short-term inflation expectations are influenced directly by the CBC's forecasts, while the evidence is weaker for medium-term predictions. This is the case even though the CBC's short-term inflation forecasts do not seem to contain any additional information that is of use for PFs when making their predictions. PFs' short-term growth expectations seem to incorporate the CBC's forecasts only when they are published in the second half of the year, when the CBC may have private information, e.g., about future data revisions.

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*Not only do expectations about policy matter, but, at least under current conditions, very little else matters.*

[Woodford, 2003, p.15.]

## 1. Introduction

Expectations about the central bank's monetary policy depend to a great extent on the market's outlook for inflation and growth. In this context, an important question for policymakers is whether the central bank (CB) can influence the market's expectations. CB forecasts may be published to enable policymakers to send signals or reveal private information, and, in this way, the predictions can serve as a tool to affect private expectations. Often, the CB's forecasts are presented in inflation reports or monetary policy reports.<sup>1</sup> The present paper studies which factors affect the predictions of private forecasters (PFs), and, in particular, whether the CB's forecasts influence these predictions. This is done by explaining the change (update) in the PFs' expectations based on the difference between the

CB's prediction and that of the PFs by means of regressions, which also include surprises in released data and changes in related expectations. Data from Chile are utilized in this study, as the Chilean Economic Expectations Survey (EES) contains questions not only on inflation and growth expectations, but also on other variables, which in turn may affect private predictions of inflation and growth.

The evidence presented in this paper suggests that short-term (current-year) inflation forecasts of the PFs in particular are influenced directly by those of the Central Bank of Chile (CBC), while the evidence is weaker, i.e., not robust, for medium-term (next-year) inflation forecasts. An illustrative analysis indicates that growth expectations are affected by the CBC's forecasts only when they are published at the end of a year. Surprises in monthly published data are important for explaining the updates of EES short-term expectations, inflation and growth, as are changes in the exchange rate and oil price expectations for inflation, and changes in the outlook for the monetary policy rate (MPR) for growth. Some persistence seems to be present in the PFs' inflation expectations, as the medium-term expectations are affected by changes in the expectations for the current year, as well as by changes in the MPR and, though not robustly so, by oil price expectations.

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<sup>1</sup> In Chile, the forecasts are presented quarterly in the Monetary Policy Report (IPoM, for its Spanish abbreviation: *Informe de Política Monetaria*).

The question as to whether private expectations are affected by the predictions of the CB or not relates to the issue of asymmetric information. Indeed, in a study of the forecasts of the U.S. Federal Reserve and those of commercial forecasters, [Romer and Romer \(2000\)](#) find that the Fed has substantially more information available when making their inflation forecasts. [Sheng \(2014\)](#) finds evidence suggesting that U.S. policymakers have an information advantage over commercial forecasters for GDP growth. If PFs are efficient, they incorporate all of the available information, including the CB's forecasts, when updating their expectations. However, the evidence from a vast body of literature generally points towards a lack of efficiency.<sup>2</sup> In this case, the PFs may still use the available CB forecasts, but inefficiently.

Several scholars have studied the predictions of PFs. One strand of the literature is concerned with characterizing these forecasts in terms of rationality and inconsistency (e.g. [Clements, 2009, 2010](#); [Engelberg, Manski, & Williams, 2009](#)), while another related strand investigates disagreement (e.g. [Capistrán & Timmermann, 2009](#); [Ehrmann, Eijffinger, & Fratzscher, 2012](#); [Lahiri & Sheng, 2008](#)). There are also several studies that relate to the investigation of CB forecasts. One thread assesses the costs and benefits of publishing these forecasts (e.g. [Faust & Svensson, 2001, 2002](#); [Geraats, 2002, 2005](#)), while another thread, which is related to the present analysis, examines the effects of CB communication and transparency on the formation of private expectations (e.g. [Jansen & de Hann, 2007](#)).

Unlike the research mentioned above, there are fewer studies that are concerned with the influence of CB projections on private expectations. Using observations from Japan, [Fujiwara \(2005\)](#) shows that professional forecasters are influenced by the Bank of Japan's inflation forecasts, but not vice versa. The analysis focuses on the dispersion of the forecasts, and suggests in addition that the CB's forecasts reduce the professional forecasters' uncertainty about the future. An influential paper by [Ehrmann et al. \(2012\)](#) explores the effects of CB communication on private forecasters using cross-country panels. The authors focus on the disagreement among private agents' forecasts, and find that CB transparency and communication reduce the dispersion among the forecasters. In a study on CB influence on private forecasts, [Hubert \(2011\)](#) concludes that private inflation forecasts are influenced by those of the CB in Japan, Sweden and the UK, but that such is not the case in Canada or Switzerland. The present study differs from these three related studies in several dimensions. The two most important are, firstly, that the focus is on the update of the PFs' expectations rather on than the dispersion among forecasters, as with [Ehrmann et al. \(2012\)](#) and [Fujiwara \(2005\)](#), or the actual forecast, as with [Hubert \(2011\)](#). This permits us to pay more direct attention to the influence that CB forecasts have on private point forecasts. Secondly, the empirical analysis in the present paper controls for, among other variables, updates of the expectations of several variables that are related to inflation and growth predictions,

<sup>2</sup> A pioneer paper is that of [Nordhaus \(1987\)](#), which rejects the hypothesis of weak efficiency in the cases of energy consumption and oil price forecasts.

as well as surprises in monthly published observations. While both [Ehrmann et al. \(2012\)](#) and [Hubert \(2011\)](#) control for news in data releases, the Chilean EES contains questions on monthly inflation and growth expectations, which allow for clear measures of surprises in the data.

The rest of the paper is organized as follows: the next section presents the model, the data utilized in the empirical analysis, and a discussion of the important issue of timing. Section 3 provides the results of the empirical exercise, and Section 4 offers some concluding remarks.

## 2. Model, data and timing

The theoretical framework our empirical analysis is based on is related to the theories of heterogeneous agents and sticky information.<sup>3</sup> The agents (the PFs and the CB) experience heterogeneity in information, which is sticky in the sense that it is diffused to the private agents only slowly.<sup>4</sup> It is assumed that the PFs and the CB each make their forecasts based on the information that they each have at a given time. The PFs' predictions are influenced by the CB's forecast if they, for example, believe that the CB has additional information that is useful for making the forecast, and/or if they believe that the parameters estimated by the CB are better for forecasting. This could be the case, for example, if the PFs think that the CB has more resources (e.g., human capital) devoted to making the projections. Then, the function used to make the prediction will depend on the CB forecast, and the update of the forecast can be written as:

$$\Delta X_t^h = X_{t+1}^h - X_t^h = f(\Delta I_{t+1}, Y_t^h - X_t^h; \hat{\Delta}\theta_{t+1}), \quad (1)$$

where  $X_t^h$  ( $Y_t^h$ ) is the PF (CB) forecast at time  $t$  with horizon  $h$ ,  $I_t$  includes the information available at the time of making the prediction, and  $\hat{\theta}_t$  are the estimated parameters, which can be understood as the weights that the forecasters assign to the different pieces of information available to them. In the present context,  $h$  is a fixed point in time, such that the comparison of the two forecasts is time-independent. In other words, the update depends on changes in the information set, the difference between the CB's forecast and that of the PFs at time  $t$ , and the update of the weights assigned to each piece of information.

An important purpose of this analysis is to discover the extent to which PFs' expectations are affected by the CB's projections. To do this, it is necessary to control for other information, which may also affect the forecasts. The general econometric model utilized is:

$$\Delta X_{t+1}^h = \alpha + \beta (Y_t^h - X_t^h) + \varphi \Delta Z_t + \varepsilon_t, \quad (2)$$

where  $\alpha$  is a constant,  $\beta$  is a coefficient that captures the extent to which the PFs' forecast update incorporates the CB's forecast,  $Z_t$  includes other variables that may cause

<sup>3</sup> Heterogeneous agent models have been studied intensively; a survey is supplied by [Hommes \(2006\)](#). Sticky information models have been discussed by, e.g., [Mankiw and Reis \(2001, 2002\)](#).

<sup>4</sup> The empirical analysis in the present paper is closely related to the literature on the epidemiological model ([Carroll, 2003, 2006](#)), which also examines forecast updating, but in a different context.

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